

PRACTICE TEST 1 - CHAPTER 6

Beginning and Intermediate Algebra by Elayn Martin-Gay, 6th edition

****Reminder: Graphing Calculators will NOT be allowed on MATH 0362 tests****

Factor out the greatest common factor from the polynomials:

<p>1. $7x - 42y + 7$</p> <p><u> </u></p> <p>$7(x - 6y + 1)$</p> <p>$= 7(x - 6y + 1)$</p>	<p>2. $b(d^3 + 7) + (d^3 + 7)$</p> <p><u> </u> <u> </u></p> <p>$(d^3 + 7)(b + 1)$</p> <p>$= (d^3 + 7)(b + 1)$</p>
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Factor the four-term polynomial by grouping; if possible:

<p>3. $8x^3 - 24x^2 + 7x - 21$</p> <p><u> </u> <u> </u></p> <p>$8x^2(x - 3) + 7(x - 3)$</p> <p>$(x - 3)(8x^2 + 7)$</p>	<p>4. $7z^2 - 3xz - 7z + 3x$</p> <p><u> </u> <u> </u></p> <p>$z(7z - 3x) - 1(7z - 3x)$</p> <p>$(7z - 3x)(z - 1)$</p>
<p>5. $5p^2 - 2pq - 10p + 4q$</p> <p><u> </u> <u> </u></p> <p>$(p)(5p - 2q) - 2(5p - 2q)$</p> <p>$(5p - 2q)(p - 2)$</p>	

Factor each polynomial completely; if possible:

6. $x^2 + 8x + 15$

\rightarrow 15 add 8
 \wedge
 $(x+5)(x+3)$

$x^2 + 3x + 5x + 15$

$= \boxed{x^2 + 8x + 15}$

Factors of 15

Add up to +8

$(x+5)(x+3)$

7. $x^2 - 5x - 3$

-3
Factor -3

Add up to -5

1. $-3 = -2$

$-3 \quad 1 = -2$

Prime.

8. $p^2 + 6pq - 16q^2$

Factors of -16

Add 6

4 $-4x$

8 $-2 \checkmark$

$(p+8q)(p-2q)$

9. $2x^2 + 6x - 56$

$2(x^2 + 3x - 28)$

Factor -28

Add +3

$2(x+7)(x-4)$

10. $20x^2 + 27x + 9$

\rightarrow 20, 9
 \wedge
 $(4x+3)(5x+3)$
 \wedge
 $(4x+3)(5x+3)$
 \wedge
 $\frac{12}{27}$

11. $-40x^3 + 58x^2 - 10x$

$-2x(20x^2 + 29x - 5)$

Factor 20, 5 add 29

$$(2 \quad 5)(10 \quad 1) \quad \begin{matrix} 3, 10 \\ 50, 2 \end{matrix}$$

$$(4x - 5)(5x - 1) \\ -25 - 4 \\ -2x(4x - 5)(5x - 1)$$

12. $15y^2 - 26y + 8$

$$\begin{matrix} 15, 8 \\ -26 \end{matrix}$$

$$(5 \quad 1)(3 \quad 8)$$

$$(5 \quad 8)(3 \quad 1)$$

$$(5y - 2)(3y - 4) \quad \begin{matrix} 4, 2 \end{matrix}$$

13. $x^2 - 14xy + 49y^2$

$$\begin{matrix} 49 & 14 \end{matrix}$$

$$(x - 7y)(x - 7y)$$

$$(x - 7y)(x - 7y)$$

$$= (x - 7y)^2$$

14. $6x^2 - 11x - 10$

$$\begin{matrix} 6, 10 \end{matrix}$$

$$(2x - 5)(3x + 2)$$

$$(2 \quad 2)(3 \quad 5)$$

$$\begin{matrix} 6 & 10 \neq 11 \end{matrix}$$

15. $3x^3 + 14x^2 + 15x$

$$x[3x^2 + 14x + 15]$$

$$x(3x + 5)(x + 3)$$

$$x(3x + 5)(x + 3)$$

$$\underline{a}^2 - \underline{b}^2 = (a+b)(a-b)$$

$$a^2 + b^2 \neq \text{No}$$

Factor the following binomials completely:

16. $x^2 - 16$

$$= x^2 - 4^2$$

$$= (x+4)(x-4)$$

17. $9x^2 - 16$

$$(3x)^2 - 4^2$$

$$(3x+4)(3x-4)$$

18. $x^4 - 16$

$$(\underbrace{x^2})^2 - 4^2 \quad (x^2 - 2^2)$$

$$(x^2+4)(x^2-4)$$

$$(x^2+4)(x+2)(x-2)$$

19. $\underline{16xy^2} - \underline{9x}$

$$x(16y^2 - 9)$$

$$x(4y)^2 - 3^2$$

$$x(4y+3)(4y-3)$$

Solve the following equations:

20. $(x+9)(x-3)=0$

$$\begin{array}{l|l} x+9=0 & x-3=0 \\ x=-9 & x=3 \end{array}$$

21. $x^2+10x-24=0$

$$\begin{array}{l} \text{—} \\ (x+12)(x-2)=0 \\ \begin{array}{l|l} x+12=0 & x-2=0 \\ x=-12 & x=2. \end{array} \end{array}$$

22. $3x^2+16x=12$

$$\begin{array}{l} 3x^2+16x-12=0 \\ (3x-2)(x+6)=0 \\ \begin{array}{l|l} 3x-2=0 & x+6=0 \\ 3x=2 & x=-6 \\ x=2/3 & \end{array} \end{array}$$

23. $3x^3-4x^2-7x=0$

$$\begin{array}{l} x(3x^2-4x-7)=0 \\ x(3x-7)(x+1)=0 \\ \begin{array}{l|l|l} x=0 & 3x-7=0 & x+1=0 \\ & 3x=7 & x=-1 \\ & x=7/3 & \end{array} \end{array}$$

24. $x(x+15)=0$

$$\begin{array}{l|l} x=0 & x+15=0 \\ & x=-15 \\ x=0, & x=-15 \end{array}$$

25. $x^2+2x=0$

$$\begin{array}{l} x(x+2)=0 \\ \begin{array}{l|l} x=0 & x+2=0 \\ & x=-2. \end{array} \end{array}$$